WHAT IS CLAIMED IS:

1. A transmission method comprising:

transmitting a plurality of packets in multiplexing manner, which header in each packet includes a first field holding a signal indicative of a packet length, a second field holding a signal indicative of a preferential order upon transferring the packet, a third field holding a signal indicative of a kind of traffic, a fourth field holding a signal indicative of a header length, a fifth field holding a control signal depending upon the kind of traffic, and a sixth field holding a signal indicative of a result of CRC operation of the header, a payload holding information signal depending upon kind of the traffic and a signal indicative of a result of CRC operation of the payload.

2. A transmission method as set forth in claim 1, wherein, said traffic is one or more kinds among a synchronous transmission mode, asynchronous transmission mode and an internet protocol.

3. A transmission method as set forth in claim 1, wherein said payload have a maximum length and a variable length.

4. A transmission method as set forth in claim 2, wherein said fifth field is consisted of a field holding a signal

indicative of a destination address, a field holding a signal indicative of a sender address, a field holding a remote alarm indicative of an alarm condition in a remote station, and a field holding a remote monitor indicative of a signal receiving condition of the remote station, and said header forms a header of the packet for transmitting a synchronous transmission mode signal.

5. A transmission method as set forth in claim 2, wherein said fifth field is consisted of a field holding a signal indicative of a destination address, a field holding a signal indicative of a sender address and a field reserved for future use, and said header is a header of the packet for transmission of an asynchronous transmission mode cell.

6. A transmission method as set forth in claim 2, wherein said fifth field is consisted of a field holding a signal indicative of a label and a field reserved for future use, and said header is a header for transmitting the packet according to IPv4 or IPv6 using a label technology.

7. A transmission method as set forth in claim 2, wherein said fifth field is consisted of a field holding a signal indicative of a destination address and a field holding a route information and an identifier for controlling traffic class

and flow spreading, and said header is a header for transmitting the packet according to IPv4 or IPv6 using an address in a network.

8. A transmission method as set forth in claim 4, wherein said header further includes a extendable field by option following said sixth field.

9. A transmission method as set forth in claim 1 wherein said multiplexed packet further includes an OAM packet used for maintenance of a network and management of operation, and stuff bytes for maintaining a period of the multiplexed packet.

10. A transmission method as set forth in claim 9, wherein said OAM packet is consisted of a field holding a byte for automatic protection switch, a field holding an order wire, a field of holding a data communication channel, a first holding a remote alarm indicative of alarm condition in the remote station, and a field holding a remote monitor indicative of the signal receiving condition in the remote station.

11. A transmission method as set forth in claim 9, wherein said stuff byte and said first field holding the signal indicative of the packet length are converted into a complete representation system with taking a predetermined offset as

a law for preventing them from generating continuous "O".

12. A network system comprising:

transmitting portion transmitting a plurality of packets with multiplexing, which header in each packet includes a first field holding a signal indicative of a packet length, a second field holding a signal indicative of a preferential order upon transferring the packet, a third field holding a signal indicative of a kind of traffic, a fourth field holding a signal indicative of a header length, a fifth field holding a control signal depending upon the kind of traffic, and a sixth field holding a signal indicative of a result of CRC operation of the header, a payload holding information signal depending upon kind of the traffic and a signal indicative of a result of CRC operation of the payload;

a relay node outputting said packet to an output path depending upon the destination address or a label added to the packet received from said transmitting portion; and

a receiving portion separating said packet received from said relay node and inputting to a switching equipment, an asynchronous transmission mode switch or internet protocol router after performing a predetermined speed changing process.

13. A network system as set forth in claim 12, wherein, said

traffic is one or more kinds among a synchronous transmission mode, asynchronous transmission mode and an internet protocol.

14. A network system as set forth in claim 12, wherein said payload a maximum length and a variable length.

15. A network system as set forth in claim 13, wherein said fifth field is consisted of a field holding a signal indicative of a destination address, a field holding a signal indicative of a sender address, a field holding a remote alarm indicative of an alarm condition in a remote station, and a field holding a remote monitor indicative of a signal receiving condition of the remote station, and said header forms a header of the packet for transmitting a synchronous transmission mode signal.

16. A network system as set forth in claim 13, wherein said fifth field is consisted of a field holding a signal indicative of a destination address, a field holding a signal indicative of a sender address and a field reserved for future use, and said header is a header of the packet for transmission of an asynchronous transmission mode cell.

17. A network system as set forth in claim 13, wherein said fifth field is consisted of a field holding a signal indicative

of a label and a field reserved for future use, and said header is a header for transmitting the packet According to IPv4 or IPv6 using a label technology.

18. A network system as set forth in claim 13, wherein said fifth field is consisted of a field holding a signal indicative of a destination address and a field holding a route information and an identifier for controlling traffic class and flow spreading, and said header is a header for transmitting the packet according to IPv4 or IPv6 using an address in a network.

19. A network system as set forth in claim 15, wherein said header further includes a extendable field by option following said sixth field.

20. A network system as set forth in claim 13, wherein said multiplexed packet further includes an OAM packet used for maintenance of the network and management of operation, and stuff bytes for maintaining a period of the multiplexed packet.

21. A network system as set forth in claim 20, wherein said OAM packet is consisted of a field holding a byte for automatic protection switch, a field holding an order wire, a field of holding a data communication channel, a first holding a remote alarm indicative of alarm condition in the remote station, and

a field holding a remote monitor indicative of the signal receiving condition in the remote station.

22. A network system as set forth in claim 20, wherein said stuff byte and said first field holding the signal indicative of the packet length are converted into a complete representation system with taking a predetermined offset as a law for preventing them from generating continuous "0".

23. A network system as set forth in claim 20, wherein said transmitting portion comprises:

(a) a switching equipment constituted of a digital subscriber transporting device, a local switching equipment or a tandem switching equipment, a signal processing portion processing a synchronous transmission mode signal output from said switching equipment, a synchronous transmission mode processing portion recognizing a leading position of said synchronous transmission mode signal and a data length, a first FIFO storing an output of said signal processing portion, a second FIFO storing an output of said synchronous transmission mode processing portion, a first packet composing portion input an output of said first FIFO and a second packet composing portion input an output of said FIFO;

(b) an asynchronous transmission mode switch, an asynchronous transmission mode cell order controlling portion

input an asynchronous transmission mode cell output from said asynchronous transmission mode switch, a third FIFO storing an output of said asynchronous transmission mode cell order controlling portion and a third packet composing portion input an output of said third FIFO;

(c) an internet protocol router, an internet protocol preference control portion input an internet protocol packet data output from said internet protocol router, a fourth FIFO storing an output of said internet protocol preference control portion and a fourth packet composing portion input an output of said fourth FIFO; and

(d) a packet multiplexing portion multiplexing outputs of said first, second, third and fourth packet composing portions, a stuff byte generating portion generating a predetermined stuff byte for outputting, and an OAM packet generating portion generating an OAM packet for outputting.

24. A network system as set forth in claim 20, wherein said relay node comprises a packet synchronization circuit establishing synchronization of the packet using the result of CRC operation of the header included in the packet per input path and the stuff byte, a physical phase/data integrated switch determining an output path of each packet with reference to the destination address or label in the header of the packet, and a packet frame forming portion for re-forming a frame of

said packet using the stuff byte.

25. A network system as set forth in claim 24, wherein said packet synchronization circuit uses $X^{16} + X^{12} + X^5 + 1$ as generating polygonal expression in said CRC operation of said header.

26. A network system as set forth in claim 24, wherein said packet synchronization circuit establishes synchronization using the stuff byte.

27. A network system as set forth in claim 20, wherein said receiving portion comprises:

(a) a packet demultiplexing portion separating received packets and an OAM packet detecting portion for detecting the OAM packet;

(b) a first packet decomposing portion processing a signaling packet in synchronous transmission mode input from the packet demultiplexing portion for generating and outputting data, clock and a primitive, a first speed changing portion generating an original clock in the sender on the basis of a received clock, a second packet decomposing portion processing the packet in synchronous transmission mode input from the packet demultiplexing portion for generating and outputting data, clock and a primitive, a second speed changing

portion generating an original clock in the sender on the basis of a received clock, a switching equipment constituted of the digital subscriber transporting device, local switching equipment or a tandem switching equipment and receiving an outputs of said first and second speed changing portions;

(c) a third packet decomposing portion processing a signaling packet in asynchronous transmission mode input from the packet demultiplexing portion for generating and outputting data and clock, a third speed changing portion generating an original clock in the sender on the basis of a received clock, and the asynchronous transmission mode switch receiving an outputs of said third speed changing portion; and

(d) a fourth packet decomposing portion processing a signaling packet in internet protocol input from the packet demultiplexing portion for generating and outputting data and clock, a fourth speed changing portion generating an original clock in the sender on the basis of a received clock, and the internet protocol router receiving an outputs of said fourth speed changing portion.

28. A network system as set forth in claim 27, wherein said speed changing portion comprises a buffer memory storing the clock output from the packet decomposing portion and a PLL extracting an average frequency of the clock before being stored in the buffer memory for reading out the clock stored

in the buffer memory according to the clock of the average frequency.